BLOCKCHAIN TECHNOLOGY IN MSME BOOKKEEPING IN INDONESIA

Mirna Amirya

Department Accounting, Universitas Brawijaya

Surel: mirna.amirya@ub.ac.id

INFO ARTIKEL

ABSTRAK

Tujuan penelitian adalah menganalisis potensi aplikasi dan pemanfaatan teknologi *blockchain* pada pembukuan UMKM di Indonesia. Penelitian ini merupakan penelitian kualitatif studi kasus dengan menggunakan analisis strategi eksplanasi dan data sekunder. Hasil penelitian menemukan bahwa *blockchain* dapat digunakan sebagai teknologi untuk pembukuan UMKM di Indonesia. Semua transaksi akuntansi berpotensi dapat dilacak dengan *blockchain*. Data dalam teknologi ini dapat dianggap sebagai informasi yang relevan karena sifat *blockchain* sebagai teknologi yang merekam dan menyimpan data yang tidak dapat diubah dan dimanipulasi. *Blockchain* digunakan sebagai *database* dan pengolahan data tetap dilakukan dengan menggunakan Sistem Informasi Akuntansi.

Kata Kunci: Teknologi *blockchain*, Pembukuan UMKM, Sistem Informasi Akuntansi, UMKM di Indonesia

The purpose of this research is to analyze the potential application and use of blockchain technology in MSME bookkeeping in Indonesia. This research is a case study qualitative research using explanatory strategy analysis and secondary data. The results found that blockchain can be used as a technology for MSME bookkeeping in Indonesia. All accounting transactions can potentially be tracked using blockchain. The data can be viewed as related explanation the character of blockchain which records and saves data as well as cannot be modified also misappropriated. Blockchain is applied as a database and data processing is over performed using an Accounting Information System.

Keyword: Blockchain Technology, MSME Bookkeeping, Accounting Information Systems, MSMEs in IndonesiaΩ

INTRODUCTION

Blockchain is one of the most significant and innovative technology recently (Pratiwi, 2022; Hartoyo, et al., 2021; Peters and Panayi, 2015; Pilkington, 2016; PricewaterhouseCoopers, 2015; Swan, 2015). Blockchain technology is expanding of an assured financial transaction system to being section of a new technology ecosystem which includes artificial intelligence, Internet of Things (IoT), and crowdsourcing. This technological advance allowed the accounting profession to create blockchain based on accounting practices to increase business information systems (Deloitte, 2016; Dorri, et al., 2016). Similarly, Deloitte (2016) expects that blockchain has extensived the practical fundamental to assist businesses wide range on the is of banking, commerce, data protection, intellectual property, government services, etc (Yermack, 2017).

Today, the implementation of blockchain technology has been widely carried out by multinational companies such as American Express, Prudential to IBM (Castilo, 2018). The development of blockchain technology is not only limited to large companies, but small and medium-sized companies have also started to apply blockchain technology. For example, global companies such as IBM have launched new products that focus on providing value through liquidity offerings for MSMEs, and are ready to become MSME partners in business transportation by implementing blockchain technology for MSMEs. A study conducted by Lagarde (2017) explains that the application of blockchain can provide several benefits for MSMEs, especially in the operational sector.

The growth of MSMEs in Indonesia cannot be separated from the role of financial institutions, both from the banking and non-banking sectors. From the banking sector, the allocation of financing aimed at the MSME sector reached 1,140.6 trillion rupiah in January 2022 (https://newssetup.kontan.co.id accessed on March 30, 2022). The integration and implementation of blockchain technology for MSMEs is expected to be a comprehensive solution for MSME actors in terms of providing capital, security, business development, and bookkeeping for MSMEs.

In the context of MSMEs in Indonesia, data submitted by the Ministry of Cooperatives and SME (2018), MSME actors grew to 64.2 million. The absorption of MSME labors is 117 million or 97% of the labor absorption of the business world. Meanwhile, the benefit of MSMEs to the national economy (GDP) in the last 5 years increased from 57.8% to 61.1%, and the remaining 38.9% was supported by large business actors, which amounted to only 5,550 or 0.01%. of the number of business actors (www.djkn.kemenkeu.go.id/accessed on March 30, 2022). Given the number

of MSMEs that continue to grow and are able to make positive contributions to society and the government, research on blockchain technology in MSME bookkeeping in Indonesia needs to be carried out so that the sustainability and business growth of MSME actors in Indonesia can continue to be improved.

Although the growth of MSMEs has increased in Indonesia, there is still little research that discusses blockchain technology in MSME bookkeeping in Indonesia. Therefore, the researcher aims to analyse the potential application and use of blockchain technology in MSME bookkeeping in Indonesia. The main contribution of the research is first, to analyse the potential application and use of blockchain technology in MSME bookkeeping, especially in Indonesia. Second, provide insight to MSME actors to implement blockchain technology in their MSME bookkeeping and design the blockchain model according to their needs. Third, providing insight to vendors to assist the blockchain integration into existent business systems. Fourth, provide insight to regulators such as new laws and policies link to the blockchain implementation in Indonesia. The research can be the base for issuing regulations regarding of MSME bookkeeping in Indonesia applying blockchain.

METHODS

This research applied qualitative research using an explanatory descriptive discuss the topic 'Blockchain Technology in MSME Bookkeeping in Indonesia'. The motivation for this research stems from the use of blockchain for bookkeeping in MSMEs in Indonesia is still in the development stage. The researcher using case studies because the purpose of this research is to analyse the potential applications and uses of blockchain technology in MSME bookkeeping in Indonesia. Sources of data is secondary data. Research object is blockchain technology in the bookkeeping of MSMEs in Indonesia.

This research was conducted through collecting data from journals, articles, and previous research. Researcher also collect data from platform of Tokoin that using blockchain to view the blockchain implementation in Indonesian firms. In addition, researchers also use online data search methods to enrich research results and analysis. After getting the data, the researcher conducted a study of the contents of the document. Study of document content is a method used to conclude information obtained through message characteristics, and is carried out systematically and objectively (Moleong, 2018). The purpose of the document content review is that the research results in the form of descriptions can be objective and systematic. To carry out data analysis using document content studies, researchers use

procedures that can help researchers draw conclusions based on the documents collected. Finally, the process of drawing conclusions by concluding the results of data analysis from the stages that have been carried out previously to resume the blockchain technology implementation in MSME bookkeeping in Indonesia.

RESULT AND DISCUSSION
Accounting on Blockchain

Accountants can leverage blockchain and smart contracts to securely save accounting data, distribute material data to interested side, as well as increase verification of business data. Blockchain known as an accounting information system or global ledger because basically blockchain is a recording system (Hartoyo, et al., 2021).

Several roles of the blockchain related to its use. The use of blockchain in the data center can wipe several items required to objections. For illustration, companies using blockchain are faster in the audit process because blockchain data is more reliable than paper evidence. In other words, blockchain is more trusted than manual documents. Before implementing blockchain, collaborating firms had their own accounting systems, so if there was an error whilst taping, a reconciliation was required to discover the truth of the error.

One of the prime examples of the advantages of blockchain technology from an accounting point of view is the supply chain. The supply chain provides an illustration of a sequential process from start to finish. Recording starts from the registration of commodities by farmers to buyers. The whole course of commodities will be documented on the blockchain so that if there is a recording error in each division or each company, it can be checked and traced directly on the blockchain sans consolidation. This is potential because the documentations in the blockchain are a series of transactions that are taped by the system using smart contracts and once recorded cannot be changed by anyone. In other words, the blockchain implementation will write off reconciliation between firms in the supply chain and will easy the duty of recording transactions. Eventually, the main advantage of using blockchain technology is that all accounting data from each company can be trusted because of the unification of recording every transaction in the global ledger system.

Blockchain Functions for Bookkeeping

Blockchain helps MSMEs to record transactions that occur. Blockchain functions to ensure that the data that will be included in financial statements is native information and cannot be diverted by timestamping documents and

transaction data and others. accounting data enters the blockchain. Once the information is put inside blockchain, the information in the global ledger will be allowed to be renewed if there are some modifications discover during the accounting process, while the prior data will not be deleted or corrected. Hence, any changes that occur will be automatically discovered.

Blockchain can help to reckon accounting data records in actual-time and can be done by calculating logical nodes in smart contracts that have calculations. Every time there is a business process such as buying and selling or other accounting processes, it can automatically be taped based on the logic that has been embedded in the smart contract. Nevertheless, this not show that the whole procedure is carried out via the blockchain. Blockchain would just help the process to be taped in actual-time using smart contracts. The procedure will still be inserted or recorded off the blockchain by someone to driver a smart contract on the logic that has been inserted. As illustration, by inserting data into the ERP, the data will automatically enter the blockchain (Hartoyo, et al., 2021).

In the end, blockchain technology really helps accountants and MSMEs in doing books and preparing financial reports. Transaction data stored on the blockchain such as income data, sales, purchase routines and other transaction activities can be used to compile financial reports.

Blockchain Implementation on the Tokoin Platform in Indonesia

In this section, the researcher describes a representative case by looking at the relevance of this study. The researcher explained the implementation of one of the platforms that use blockchain technology for MSMEs in Indonesia, namely the Tokoin platform.

Tokoin Platform

Started in 2018, Tokoin is a platform that utilizes blockchain technology to build a digital business identity and digital bookkeeping system for Micro, Small and Medium Enterprises (MSMEs) in Indonesia. As an MSME, the company usually has: limited business access, low credibility, low reputation, and have challenges in obtaining loans from financial institutions. In response to this limitation, Tokoin is committed to building the credibility and reputation of MSMEs through access to the Tokoin ecosystem through financial intermediaries consisting of financial institutions, investors, the government; suppliers consisting of brand companies, markets, logistics partners; and service providers consisting of real estate agents, data miners, advertisers and research firms.

Tokoin builds a preferable and more recent business ecosystem that proposes meaningful partnerships for complete inclusive development. There are three reliable completions that Tokoin offers to support MSMEs in

finishing their problems, specifically:

1. Build the digital recognition of MSMEs to reflect a sustainable fame. Business profiles, activities, and buying behaviour are the keys for MSMEs to generate meaningful properties on the Tokoin platform. Tokoin platform performs by gathering data, beginning from the Know Your Customer (KYC) steps, daily transactions, recording behaviour, to creating reputation for Tokoin consumers.

2. Placing MSMEs in applying their data to produce over financing opportunities. Tokoin serves suitable technology infrastructure to record and arrange data transaction and use data by providing worth to it.

3. Provide opportunities for MSME development by creating business alliances.

Tokoin's partnerships to several organizations allow users to access the treatments they need. From a user perspective, Tokoin will permit users to develop their fame and trust by flashing user behaviour. At that time, they can get out to any financial firm aiming for business extension. Meantime, financial firms will benefit from a potential user gain process by shifting the business credit fame of Tokoin users.

Main Characteristics of the Tokoin Platform

Moreover, Tokoin platform has two main characters described in the Tokoin whitepaper, namely:

Digital Identity (Business Profile)

Tokoin applies the digital sector as a simplicity and charter to meet the needs of MSMEs for naming that has a prestige and logic. By receiving a digital business ID, MSMEs will capable to document and track their business processes in a digital ledger and share the credit ranks they develop to other alliances in the Tokoin ecosystem. This is the decentralized character of blockchain technology where there is no central point of competence to records the data. Tokoin purposes to build an ecosystem that is promoted by data allocation and at the same time provide benefits for any party by using blockchain technology in business processes.

Figure 1:
Flow of Payment and Receipt of TOKO

Source: Tokoin Whitepaper, 2019

Digital Ledger (Data)

All transactions out of MSME business operations in Tokoin users would be stored digitally as well as collectively into computerized record be familiar as a digital ledger. Whole data of KYC for more specification information like cash flow, sales, revenue as well as daily buying of the business will be recorded as a beneficial asset. These assets will also be gathered, prepared, as well as rated based on the information deepness on them. Worth embeded will be an indicator of a reputation-building assessment connected to the business profile. The data in the digital ledger can be distributed to the Tokoin ecosystem to generate converse connections among each participant.

Tokoin growth is carried out by developing an ecosystem that contains puttings to provide the impression of sharing value from one user to another. Any user has a part to play in determining that the ecosystem stay useful to every business created. The interconnection among users and partners is enabled by blockchain technology to ensure that every user has safety to each activity and over trustworthy relation. MSMEs act as data providers and to dispatch transaction activity data thru the Tokoin App, Tokoin will operate and approve valuable asset data. Furthermore, partners can get data by converting it for hold tokens.

How the Tokoin Platform Works

     Tokoin provides a platform for small entrepreneurs or MSMEs to create accounts and complete identities. The following image illustrates how the Tokoin platform works.

Figure 2.
Illustration of How the Tokoin Platform Works

     The way the Tokoin platform works is B2B or business to business. This means, if a business actor (MSME) needs goods or materials, then the business actor must open an account and complete the data to be purchased such as area, type, and several other things. Next, the best recommendations from fellow entrepreneurs who have names will appear. If appropriate, then business people can directly buy it with the token shop and confirm. All transactions are carried out on the Tokoin website or mobile application and recorded in real-time. To support its infrastructure, Tokoin cooperates with Tomochain, a company focused on building efficient blockchain infrastructure for decentralized applications, token issuance, and integration.

     Tokoin helps MSMEs to manage all purchases and monthly payments by adjusting expenses to the allocation of working capital. This is useful so that MSME business capital is not disturbed. In purchasing through the Tokoin platform, MSMEs can maintain business capital in a healthy condition. As a derivative of the B2B business ecosystem, Tokoin offers various benefits, one of which is providing efficiency in supply chain distribution. This can cut any unnecessary costs. As a result, Tokoin can help MSMEs manage as much business capital as possible by reducing purchasing costs because MSMEs can directly buy these products directly to sellers. The effectiveness in purchasing can occur due to the distribution of data under the Tokoin platform. MSMEs as buyers in the B2B ecosystem have information about business needs and the amount, which has been entered previously. This information is recorded as nodes under the blockchain

system and forms a variety of ways to be distributed directly to any seller who needs it.

The distribution of this data makes it easier for MSMEs as sellers to place their products more precisely in a particular market. On the other hand, as a data supplier, Tokoin will provide discounted prices to MSMEs as a direct benefit for their purchases. Then, the good business reputation of the transaction timestamp through blockchain technology as an indirect benefit.

Tokoin itself is a blockchain-based platform, all information data is recorded accurately using cryptography, the data is stored in blocks, including timestamps. If a data set of information has been logged into blocks, the data becomes immutable and is governed by the rules of the network. Any changes made in each block can create a new block that is connected to the previous block. This means that when information comes in, it will still be there. Such information can be trusted because it cannot be changed or manipulated without leaving a trace.

Timestamps on transactions have the potential to be the most important part of business development, it can be a measure of whether the company can repay obligations such as loans and the estimated timeframe required for repayment. This can help institutions to avoid problems with businesses operating without adequate funds. Timestamp on each transaction also serves to avoid data manipulation.

Therefore, Tokoin encourages its members to create trusted profiles to increase security for all entities in the ecosystem. All transactions and data are recorded in the blockchain, ensuring transparency and reputation. Through the use of smart contracts, Tokoin ensures product and service transparency by providing correct information and monitoring the status of ongoing processes. Partners will be absolutely sure about safe delivery, quality and payment transactions. Every transaction on the blockchain can be instantly validated. When accepting a transaction, the user has an encryption code that must be verified to confirm the identity of the user on the blockchain, which allows for faster and more secure transactions.

Blockchain as an Accounting Information System

An AIS is a computer-based method for tracking the accounting and business activities of a firm. It usually composes of the following major parts: (1) the revenue cycle, that implicates selling goods or services and collecting payments for sales; (2) the yield cycle, that implicates purchasing and selling and paying for goods used by the firm; the human resources cycle implicates activities connected to recruiting and paying workers; (3) the production cycle, that covers the activity of converting crude materials as well as labor for end goods; (4) the funding cycle, that covers activities to obtain funds

required to perform the firm, pay creditors as well as hand out gains to investors. Each activity in the cycle will be saved in the AIS database. Outwardly of taping firm transaction data, Accounting Information Systems fulfill two base purposes: providing beneficial information for management for decision making and providing appropriate internal controls (Trigo, 2016).

Accounting information system is used as a management instrument in obtaining data, interpreting, as well as making decisions. The AIS even has a purpose as an instrument to account for the competence bestowed by management to the level of subordinate management and implementing employees. The duty will be carried out well with the assist of a system that permits every worker to tape and store each occurence and transaction that happens in a systematic, organized, standardized, as well as simple manner. Therefore, the AIS is a net of all manners, molds, and instruments applied to set financial data to reports that are applied by management to manage their business transactions as well as tools used for management decision making (Marina, et al., 2017).

AIS is a subsystem of a unified business process that is interrelated with each other. The objectives of the AIS are: (1) gathering and keeping information connected for firm's financial transactions; (2) operationing data to information that can be used for the decision-making process; (3) managing each feature of the firm (Marina, et al., 2017).

Blockchain is possible to be a technology for AIS because blockchain can track each shape of business activity and firm activities in actual-time. The data contained in this technology can be material and trusted information due to the character of blockchain that is competent to taping and saving data that cannot be modified or diverted. Applying this technology, it will simplify for firms to track and analyse data as a shape of decision making in the prospective.

In Indonesia, blockchain can be applied as a database to keep transaction papers to increase data legality. This is because the data keeping works is carried out in actual-time applying a smart contract where all data can be stored automatically based on the computational logic in the smart contract.

On this case, the use of blockchain on the Tokoin platform purposes to save information on MSME transactions. Thus, it will be simple for firms or persons who demand data from MSMEs to recognize MSME activities in a distributed database, which is blockchain. The data showed on the blockchain is the activity of the firm which can be analysed to assist in decision making. Therefore, blockchain can be a material and trusty AIS because of its consistency. In one case, there are modifies, it will be convenient to identify

each modification.

As stated by Tan and Low (2019), an AIS is a special and obtainable database by applying a multi-tiered software architecture. There are three places in AIS software, which involve data management level, application level, and presentation level. Tan and Low (2019) showed two implications of a blockchain-based AIS suiting to the idea of an AIS as a multi-tiered database. First, blockchain allows it to be used at the database engine level that transactions are organized, still it looks unlikely to switch AIS at the application level. The argument is that blockchain is just applied as a database which has nothing to do with applications that convert data to beneficial accounting information. Hence, blockchain has been applied as a platform to store information before the information is prepared to beneficial information to conclusion creating thru the AIS. The preparation of financial statements of a database of checked transactions as well as applying the database as an accounting application are two distinct processes.

Second, a blockchain-based AIS may emerge into shape of a private blockchain. Some accountants not have a practical character in carring out the system. There are some benefits of using a private blockchain for AIS in a firm, such as reduce hazard of accounting management fraud, reduce confirmation costs, and top fulfillment to legal needs of main charge for accounting information (Tan and Low, 2019).

In cases like Tokoin, blockchain is applied as a data recorder that business activity data in MSMEs is continuously renewed to the blockchain, that creates it potential to view the increase in MSMEs business transactions sine any falsification. It will be simple to analyse the transactions and financial data of MSMEs that will be allowed on establishing decisions. Blockchain in Indonesia can be a trusty database, regarding data that will be examined by each following node, Tokoin will play a task in sorting the data before the data is inserted to the blockchain.

CLOSING
Conclusion

Based on the results of this study, the researchers resume that blockchain technology supports the bookkeeping of MSMEs in Indonesia. Blockchain is a system of data structures applied in technology and can automate transaction records applying smart contracts. The blockchain will be applied as a database to keep any transaction information or reports created using other platforms and stored into the blockchain for inspection and timestamping by nodes.

Blockchain serves benefits for accounting, especially for AIS. Recording transaction data that was priorly approved by nodes in the network before the data is cutted onto the blockchain is a shape of look-out progress of the AIS. The blockchain database facilitates the AIS for track material information and the information can be applied as a guide in managing financial reports. The implementation of blockchain here purposes to serve a timestamp on each transaction to evade data manipulation.

Blockchain is a database engine for AIS applications because an AIS is a computer-based method that tracks the accounting and business transactions of a firm. Blockchain is only applied for data security, whilst the operationing of data for information will be performed by the AIS. Blockchain could not automatically cultivate data into information that may be required in accounting.

Limitations and Suggestions

This study analyses blockchain technology on MSME bookkeeping in Indonesia by analysing a case study. Further research can use several case studies taken from various reliable and relevant sources. As well as conducting a factor analysis of the opportunities and challenges of blockchain implementation for sustainable MSMEs in order to improve the results and interpretation of the analysis with a better representation.

REFERENCES

Castilo, D. M. 2018. Big Blockchain: The 50 Largest Public Companies Exploring Blockchain. https://www.forbes.com/sites/michaeldelcastillo/2018/07/03/big-blockchain-the-50-largest-public-companies-exploring-blockchain/#48453a622b5b. Accessed date March, 30, 2022.

Dai, J. and Vasarhelyi, M. A. 2017. Toward Blockchain-Based Accounting and Assurance. Journal of Information Systems, 31(3), 5-21.

Deloitte. 2016. Blockchain: Enigma, Paradox, Opportunity. Available at: https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/financial-services/deloitte-nl-fsi-blockchain-enigma-paradox-opportunity-report.pdf.

Dorri, A. Kanhere, S. S. and Jurdak, R. 2016. Blockchain in Internet of Things: Challenges and Solutions. Available at: https://arxiv.org/ftp/arxiv/papers/1608/1608.05187.pdf.

Grigg, I. 2005. Triple Entry Accounting. Available at: http://iang.org/papers/triple_entry.html.

Hartoyo, A. Sukoharsono, E. G. and Prihatiningtias, Y.W. 2021. Analysing the Potential of Blockchain for the Accounting Field in Indonesia. Jurnal Akuntansi dan Keuangan, 23(2), 51-61.

Lagarde, S. D. 2017. What are the Possible Benefits of Blockchain for Small and Medium-sized Enterprises?. Thesis. Univesity of Nicosia, Australia.

Marina, A. Wahjono, S. I. Syaban, M. dan Suarni, A. 2017. Sistem Informasi Akuntansi: Teori dan Partikal. Surabaya: UM Surabaya Publishing.

Moleong, L. J. 2018. Metodologi Penelitian Kualitatif. Bandung: PT. Rosdakarya.

Peters, G. and Panayi, E. 2015. Understanding Modern Banking Ledgers Through Blockchain Technologies: Future of Transaction Processing and Smart Contracts on the Internet of Money. Available at SSRN: https://ssrn.com/abstract=2692487 or http://dx.doi.org/10.2139/ssrn.2692487.

Pilkington, M. 2016. Blockchain Technology: Principles and Applications. Available at: https://papers.ssrn.com/sol3/Papers.cfm?abstract_id¼2662660.

Pratiwi, L. L. 2022. Implementasi Blockchain pada Akuntansi dan Audit di Indonesia. Jurnal Ilmiah Akuntansi dan Keuangan, 4(6), 2185-2203.

PricewaterhouseCoopers (PwC). 2015. Money Is No Object: Understanding the Evolving Cryptocurrency Market. Available at: https://www.pwc.com/us/en/financial-services/publications/assets/pwc-cryptocurrency-evolution.pdf.

Sangster, A. 2016. The Genesis of Double Entry Bookkeeping. The Accounting Review, 91(1), 299–315.

Sasongko, D. 2020. UMKM Bangkit, Ekonomi Indonesia Terungkit. https://www.djkn.kemenkeu.go.id/artikel/baca/13317/UMKM-Bangkit-Ekonomi-Indonesia-Terungkit.html. Diakses pada tanggal 30 Maret 2022.

Swan, M. 2015. Blockchain: Blueprint for a New Economy. Boston, MA: O'Reilly Media, Inc.

Tan, B. S., & Low, K. Y. 2019. Blockchain as the Database Engine in the Accounting System. Australian Accounting Review, 29(2), 312–318.

Trigo, A., Belfo, F., & Estébanez, R. P. 2016. Accounting Information Systems: Evolving towards a Business Process Oriented Accounting. Procedia Computer Science, 100, 987–994.

Walfajri, M. 2022. Januari 2022, Kredit UMKM Perbankan Melesat 13,3% yoy. https://newssetup.kontan.co.id/news/januari-2022-kredit-umkm-perbankan-melesat-133-yoy?page=all. Diakses pada tanggal 30 Maret 2022.

Yermack, D. 2017. Corporate Governance and Blockchains. Review of Finance, 21(1), 7-13.